

# Disruptive Energetics

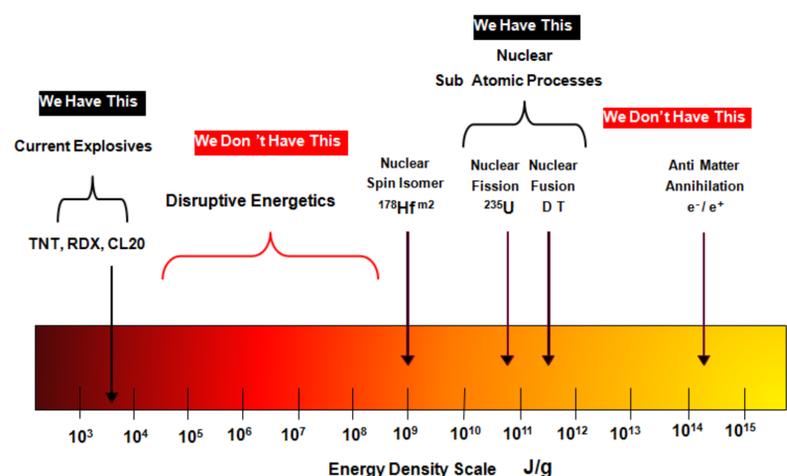


S&T Campaign: Sciences for Lethality & Protection

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## Research Objective

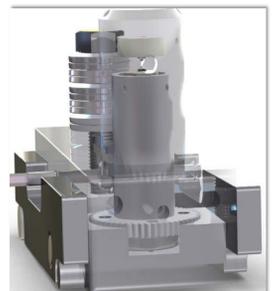
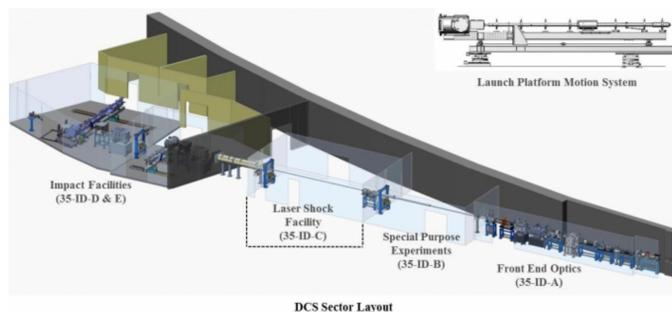
- Discovery and development of revolutionary energetic materials with properties radically superior to current capabilities.
- Research approach diverges from traditional multistep chemical synthesis techniques and towards innovative disruptive physics-based methods.



Energy Density Spectrum showing targeted regions

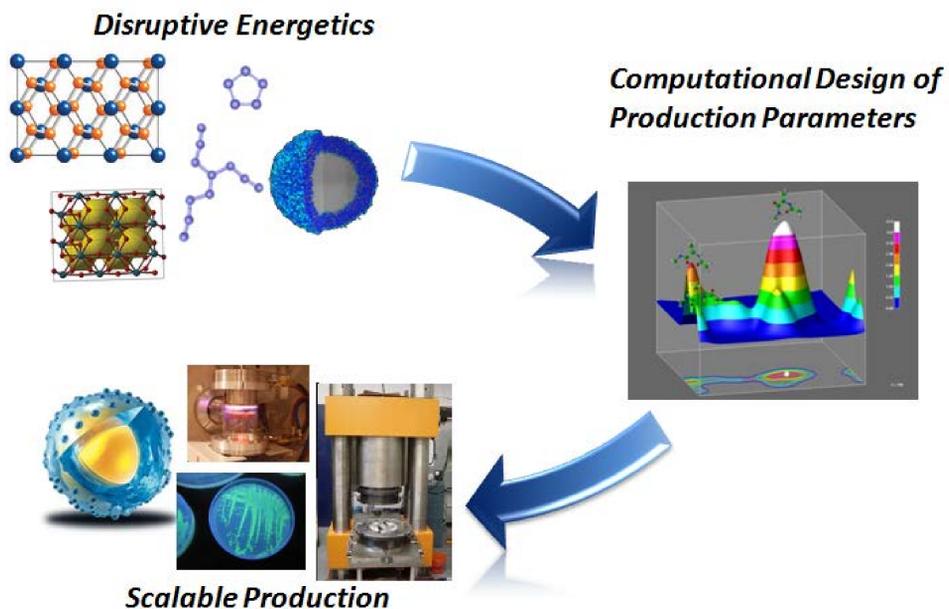
## ARL Facilities and Capabilities Available to Support Collaborative Research

- A broad range of high –pressure resources are available – diamond anvil cells, large volume cells, rotational diamond anvil cells, high-temperature capability
- Raman and Infrared Spectroscopy at various wavelengths, Reflectivity, Optical Imaging, CARS
- Dynamic Compression Sector at Advanced Photon Source
- Full suite of Analytical Testing Capability (DSC, calorimetry, TGA, SEM, NMR, etc)



## Challenges

- Fabrication of target material(s) and characterization to verify projected properties.
- Development of scalable pathways including intermediate materials, optimization of processing conditions, and stabilization techniques
- Demonstration of scaled production technique amenable to large scale synthesis



Production of Disruptive Energetics

## Complementary Expertise/ Facilities/ Capabilities Sought in Collaboration

- Expertise in Design/Development of High-Pressure Vessels
- Expertise in x-ray diffraction analysis of new materials
- Expertise in High-Pressure Experiments for the identification of new systems of interest
- Expertise in characterization of material properties under dynamic conditions